INSTRUMENT SHOP

GM SERIES

ANALOG-TO-DIGITAL CONVERSION SYSTEMS

INTERFACE MANUAL

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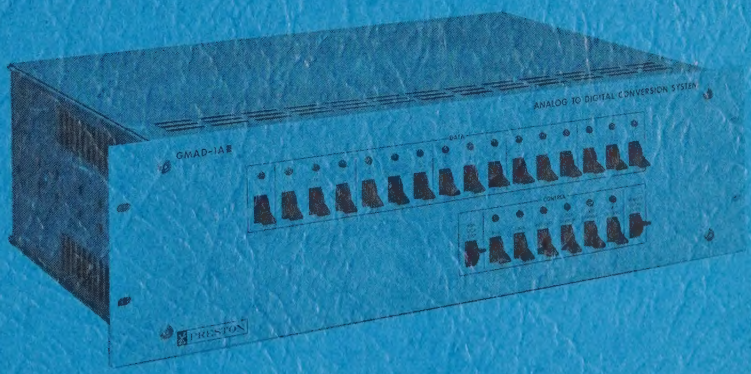


INSTRUMENT SHOP

PRESTON

GM SERIES

ANALOG-TO-DIGITAL

CONVERSION SYSTEM

INTERFACE MANUAL

PART NUMBER 82520-00

MODEL NUMBER GMAD2A-15B-W/DR11W

SERIAL NUMBER RAC-096

CM SERIES

ANALOG-TO-DIGITAL

CONVERSION SYSTEM

INTERFACE MANUAL

PART NUMBER 82520-00

MODEL NUMBER CMADZA-ISB-W/DRIIM

SERIAL NUMBER N/A - c 76

PS _____ _____ _____ JULY _____ August 3, 1983

CONTENTS

Table of Contents

DOCUMENTATION PREFACE. 1

PART ONE, INTERFACE MANUAL. 1

PART TWO, MAINTENANCE MANUAL. 1

SYSTEM DESCRIPTION. 2
- INTRODUCTION. 2
- SPECIFICATIONS. 3
- SYSTEM OPERATION PART NUMBER 82520-00. 3
- ANALOG INPUT (Figure 90233) 3
- GENERAL INFORMATION. 4
- POWER UP. 4
- FRONT PANEL CONTROLS. 4
  - DATA DISPLAY. 4
  - DATA SWITCHES. 5
    - FUNCTION CONTROL DISPLAY/SWITCHES. 5
    - FUNCTION CONTROL DISPLAY. 5
    - REMOTE, LOCAL, ENTER. 5
    - FIRST CHANNEL. 6
    - LAST CHANNEL. 6
    - CLOCK DIVISOR. 6
    - ADDRESS. 6
    - DATA. 7
    - AUX. 7
    - RUN, STOP, STEP. 7
  - LOCAL CONTROL FEATURES. 8
  - MCLS LOGIC CONTROL SYSTEM 8
  - FUNCTION CONTROL SWITCHES (First, Last, Clock Divisor). 8
  - FRONT PANEL OPERATION EXAMPLE. 9
    - SEQUENTIAL MODE (FRONT PANEL OPERATION). 9
    - SINGLE CHANNEL OPERATION FRONT PANEL. 11
    - DATA DISPLAY. 12
    - NON OPERATING FUNCTIONS (VIA FRONT PANEL). 12
- INTERFACING SYSTEM 82520-00 TO DR11W I/O. 13
- REMOTE PROGRAMMING AND OPERATION VIA THE STANDARD INTERFACE. 15
  - RUN & RSO (COMMAND BITS 7 & 8). 16
  - BRIEF EXAMPLE (REMOTE PROGRAMMING) #1 "PROGRAMMED GO". 18
    - STOP METHODS (AFTER A PROGAMMED GO START). 20
  - BRIEF EXAMPLE (REMOTE PROGRAMMING) #2 "PROGRAMMED NOGO". 21
  - CONTROL HANDSHAKE ENABLE (BIT 2). 23
  - DATA ALL ONE'S (FFFF). 24
  - I/O CONTROL WORD DEFINITION. 25

CONTENTS

Table of Contents

DOCUMENTATION PREFACE. i

PART ONE: INTERFACE MANUAL 1

PART TWO: MAINTENANCE MANUAL 1

SYSTEM DESCRIPTION 2
INTRODUCTION 2
SPECIFICATIONS. 3
SYSTEM OPERATION PART NUMBER 82520-00. 3
ANALOG INPUT (Figure 90233) 3
GENERAL INFORMATION. 4
POWER UP 4
FRONT PANEL CONTROLS. 4
DATA DISPLAY. 4
DATA SWITCHES 5
FUNCTION CONTROL DISPLAY/SWITCHES 5
FUNCTION CONTROL DISPLAY. 5
REMOTE, LOCAL, ENTER 5
FIRST CHANNEL. 6
LAST CHANNEL. 6
CLOCK DIVISOR. 6
ADDRESS. 6
DATA. 7
AUX. 7
RUN, STOP, STEP. 7
LOCAL CONTROL FEATURES. 8
MCLS LOGIC CONTROL SYSTEM 8
FUNCTION CONTROL SWITCHES (First, Last, Clock Divisor) 8
FRONT PANEL OPERATION EXAMPLE. 9
SEQUENTIAL MODE (FRONT PANEL OPERATION). 9
SINGLE CHANNEL OPERATION FRONT PANEL. 11
DATA DISPLAY. 12
NON OPERATING FUNCTIONS (VIA FRONT PANEL). 12
INTERFACING SYSTEM 82520-00 TO DRIIN I/O 13
REMOTE PROGRAMMING AND OPERATION VIA THE STANDARD INTERFACE. 15
RUN & RSO (COMMAND BITS 7 & 8). 16
BRIEF EXAMPLE (REMOTE PROGRAMMING) #1 "PROGRAMMED GO". 18
STOP METHODS (AFTER A PROGRAMMED GO START). 20
BRIEF EXAMPLE (REMOTE PROGRAMMING) #2 "PROGRAMMED MODE" 21
CONTROL HANDSHAKE ENABLE (BIT 2) 23
DATA ALL ONE'S (OFFF). 24
I/O CONTROL WORD DEFINITION. 25

CONTENTS

EXPANDED PROGRAM EXAMPLE. 26
STEP 1. 26
STEP 2 DATA. 27
STEP 3 ENTER RUN MODE (RSO & RUN). 27
G L O S S A R Y. 30
WORD LIST- SYSTEM 82520-00. 30
CONTROL WORD. 30
SPECIAL (MODE) BIT 16. 30
LOCAL LOCKOUT (MODE) BIT 15. 30
REMOTE/LOCAL* BIT 14. 30
EXT/INT* (CLOCK SOURCE BIT 13). 30
EXT/INT* START SOURCE BIT 12. 30
BURST/CHAN CLOCK (MODE) BIT 11. 30
CAMEN/CAMBY* BIT 10. 30
SEQ/RAN* BIT 9. 30
RUN STOP ONLY BIT 8. 30
RUN BIT 7. 30
CLOCK DIVISOR BIT 6. 30
FIRST ADDRESS BIT 5. 30
LAST ADDRESS BIT 4. 30
CAM WRITE BIT 3. 30
CONTROL HANDSHAKE ENABLE BIT 2. 31
INPUT STROBE. 31
OUTPUT ACKNOWLEDGE. 31
MASTER RESET. 31
USER LIST --HOW TO USE--. 32
USER LIST. 32
PAGE HEADER LABEL DESCRIPTION. 33
USER CONNECTION LIST SYSTEM 82520-00. 34

DRAWINGS. 40

FACTORY TEST REPORT. 41

CONTENTS

EXPANDED PROGRAM EXAMPLE. 25
STEP 1. 25
STEP 2 DATA. 27
STEP 3 ENTER RUN MODE (RSO & RUN). 27
G L O S S A R Y. 30
WORD LIST- SYSTEM 82520-00. 30
CONTROL WORD. 30
SPECIAL (MODE) BIT 16. 30
LOCAL LOCKOUT (MODE) BIT 15. 30
REMOTE\LOCAL* BIT 14. 30
EXT\INT* (CLOCK SOURCE BIT 13) 30
EXT\INT* START SOURCE BIT 12. 30
BURST\CHAN CLOCK (MODE) BIT 11. 30
CAMEN\CAMRY* BIT 10. 30
SEQ\RAN* BIT 9. 30
RUN STOP ONLY BIT 8. 30
RUN BIT 7. 30
CLOCK DIVISOR BIT 6 30
FIRST ADDRESS BIT 5. 30
LAST ADDRESS BIT 4. 30
CAM WRITE BIT 3 30
CONTROL HANDSHAKE ENABLE BIT 2. 31
INPUT STROBE. 31
OUTPUT ACKNOWLEDGE 31
MASTER RESET. 31
USER LIST --HOW TO USE--. 32
USER LIST. 32
PAGE HEADER LABEL DESCRIPTION 33
USER CONNECTION LIST SYSTEM 82520-00 34

DRAWINGS. 40

FACTORY TEST REPORT 41

ADDENDUM LIST

REVISION CODE	DESCRIPTION
83180	ORIGINAL 8 2 0 5 0 - 0 0 INTERFACE
83213	ORIGINAL 8 2 5 2 0 - 0 0 INTERFACE

ADDENDUM LIST

REVISION CODE	DESCRIPTION
83180	ORIGINAL 8 2 0 5 0 - 0 0 INTERFACE
83213	ORIGINAL 8 2 5 2 0 - 0 0 INTERFACE

INTRODUCTION

This document contains instructions for the operation of the Preston GM Series Product noted on the title page.

The part number which describes this unit is located on the rear panel of the instrument. In addition, each unit is assigned a serial number unique to the particular piece of hardware to which it is attached. These numbers describe this instrument completely and should be referred to in all correspondence.

Should the system need to be returned to Preston for repair or rework, the item should be sent to the Anaheim plant-- Attention: Customer Service-- and the shipping prepaid. Also, include reasonably complete information concerning the nature of the failure or your reason for the return of the equipment.

Our Address Is: PRESTON SCIENTIFIC
805 East Cerritos Avenue
Anaheim California 92805

Our Telephone No. Is: (714) 776-6400

Our Telex No. Is: 65-5321

DOCUMENTATION PREFACE

The documentation for this product is separated into two major parts.

PART ONE, INTERFACE MANUAL

The first part, titled INTERFACE MANUAL, accompanies the product when shipped to the customer. The INTERFACE MANUAL contains the basic information to operate the product, including Front Panel Description, Operation Instructions, Rear Panel Connector Designations, Interface Requirements, and User Connection Lists.

PART TWO, MAINTENANCE MANUAL

The second part titled, MAINTENANCE MANUAL, contains Theory, Calibration, Trouble Shooting, Spare Parts Listing, and a Complete Drawing Package. It also includes the information contained in the INTERFACE MANUAL (PART ONE) and any changes or corrections that may affect the INTERFACE MANUAL.

This second part of the documentation will be sent to the customer within 30 days after shipment of the product.

This two part documentation is designed to provide the user with immediate information for the operation of the system and to provide final documentation that most correctly defines the product.

If you have any questions regarding any information contained in either of these two documents, please contact the MANUALS DEPARTMENT of PRESTON SCIENTIFIC at 714-776-6500 or TELEX 65-5321 (PRESTON ANA).

SECTION 1

SYSTEM DESCRIPTION

INTRODUCTION

This section contains a brief general outline of your particular system. It also contains information concerning special specifications or configurations of the system.

Your GM Series Analog-to-Digital Conversion system is identified by the part number 82520-00. This part number describes a system consisting of:

1 Model GMAD2A-15B Analog to Digital Converter.
1 Model MCLS Logic Control System.
16 channels of Model MHS-2A Multiplexer.
1 Interface to DR11W including cable.
1 Model GM Card Module complete with chassis slides, power supplies, and all necessary mating connectors.

SPECIFICATIONS

FULL SCALE: +/-10 volts.
RESOLUTION: 14 binary bits and sign.
CONVERSION RATE: 500 MHz.
OUTPUT CODE: Two's complement.
LOGIC LEVELS: Compatable with DEC DR11W.
PRIME POWER: 115 volts 50-60 Hz.

SYSTEM OPERATION PART NUMBER 82520-00

ANALOG INPUT (Figure 90233)

The analog input is single ended and requires a HI, SH, connections. These connections are made via a multipin connector located on the rear panel. The user source impedance should be kept a minimum, preferably less than 100 ohms.

Refer to the USER LIST located in Sections 1 and 11 for these connections.

Suggested method of connection: Tie the input HI to pins 1 through 16, the LO side (shield) to pins 20 through 35. Tie the SIGNAL OUT LO to INPUT LO (JUMPER). The ANAGRD should be conected to the systems analog ground.

GENERAL INFORMATION

A glossary of signals and their description for each user connection is included in Section 1. Also information on hou to use the various connection lists is located in Section 1 and 11(MAINTENANCE MANUAL)

POWER UP

Application of power starts an automatic power up condition determining an initial clock divider, first channel, last channel and operating mode. These values may be viewed on the front panel by selecting the desired data via the FUNCTION CONTOL SWITCHES.

FRONT PANEL CONTROLS

DATA DISPLAY

Binary display of Output Data, Channel Address, Clock divisor, or operating mode as determined by the FUNCTION CONTROL SWITCHES.

DATA SWITCHES

Sets data for First Channel, Last Channel, and Clock Divisor when followed by the front panel "ENTER".

FUNCTION CONTROL DISPLAY/SWITCHES

FUNCTION CONTROL DISPLAY

Visual feedback of Function Control Switch selection. Data displayed is automatically updated. The exception is that when the REMOTE FUNTION is being used the system may be too busy to update the front panel as in the RANDOM mode or the SEQUENTIAL mode, NO CLOCK DIVISOR (no auto clock).

REMOTE, LOCAL, ENTER

Used to select either Normal Mode (remote) or local front panel control or used to enter data associated with other Function Control switches.

FIRST CHANNEL

Allows Data Switches to be used to enter First Channel Address Data (up to 12 bits) or to display First Channel Address.

LAST CHANNEL

Allows Data Switches to be used to enter Last Channel Address Data (up to 12 bits) or to display Last Channel Address.

CLOCK DIVISOR

Allows Data Switches to be used to enter Clock (GMDSRC) Frequency Divisor up to (16 bits) or to display Clock Divisor.

ADDRESS

Allows Data Display to be used to display multiplexer channel address.

DATA

Allows Data Display to be used for ADC Data Display.

AUX

If system is in the REMOTE mode, this switch will allow the display of the REMOTE operating mode. If the REMOTE, LOCAL, ENTER switch is in the LOCAL mode the last mode manually entered will be displayed.

If system is in the Front Panel Mode (LOCAL) this switch can enter a desired system operating mode (with some exceptions).

RUN, STOP, STEP

Used for local control. RUN ... Sequence through channels using the system's divided down internal clock. STOP ... Stop the sequence. STEP ... Manual channel advance producing a data conversion (channel rate mode only).

LOCAL CONTROL FEATURES

Set first and last channel limits for manual or continuous test mode.

Set random channel manual or continuous test mode by setting First and Last channel limits to the same channel address.

Set clock rate via the clock divisor, for either local or remote operation

Use RUN-STOP-STEP control switch to operate system in local mode.

MCLS LOGIC CONTROL SYSTEM

Provides both front panel and remote channel addressing capability. First and last channel address registers may be entered either from remote interface system or from the front panel switches. Separate registers are provided for both local and remote DATA.

FUNCTION CONTROL SWITCHES (First, Last, Clock Divisor)

When used with the ENTER function, these switches will input data as set by the DATA SWITCHES to the appropriate data storage register. When used independent of the ENTER function switch these switches

direct the display to indicate the contents of the appropriate storage register.

FRONT PANEL OPERATION EXAMPLE

The folowing information contains examples of the methods for using the front panel switches when operating the system in the LOCAL mode as designated by the Front Panel REMOTE, LOCAL, ENTER switch.

SEQUENTIAL MODE (FRONT PANEL OPERATION)

In the front panel LOCAL mode the system always runs in the sequential mode. The sequencing clock is determined by the master 5 MHz Mhz clock divided by the programmable divisor.

<> Set the Mode Switch to LOCAL.

<> Select the first channel of the sequence by:

..Pressing the FIRST CHANNEL SWITCH (momemtary). The existing first channel address will be indicated in the DATA DISPLAY.

..Set the DATA switches to the desired FIRST channel.

..Press the ENTER switch (momentary) to load the first channel

address into the system's register.

<> Select the last channel of the sequence by:

..Press the LAST CHANNEL SWITCH (momentary). The existing last channel address will be indicated in the DATA DISPLAY.

..Set the DATA switches to the desired LAST channel.

..Press the ENTER switch (momentary) to load the last channel address into the system's register.

<> Set the clock divisor by:

..Press the CLOCK DIVISOR switch (momentary). The existing clock divisor will be indicated by the DATA DISPLAY.

..Set the DATA switches to select the clock divisor based upon a 5 MHz source clock to produce the desired channel to channel repetition rate (minimum divisor 16 for 312 kHz systems, 10 for 500 kHz systems and 5 for 1 MHZ systems).

..Press the ENTER switch to load the divisor into the system's register.

<> RUN MODE

..Place the RUN, STOP, STEP switch to the STOP postition.

..Press the ADDRESS switch (momentary). This will display the address.

..Place the RUN, STOP, STEP switch to the RUN position. The system will sequence between the first and last channels at the rate determined by the clock divisor.

.. Pressing the FUNCTION CONTROL SWITCH "DATA" will display the data of the conversions on the front panel.

<> If the RUN, STOP, STEP switch is placed in the STOP position, the system will continue sequencing to the last channel and stop.

<> If the RUN, STOP, STEP switch is place directly to the STEP position from the RUN position the system will stop immediately at any random channel in the sequence.

SINGLE CHANNEL OPERATION FRONT PANEL

To operate the system on a single channel which will simulate the RANDOM mode operation via the front panel, set the FIRST and LAST channel selection to the same channel and procede with the normal front panel sequential operation.

Place the RUN, STOP, STEP switch to the STOP position

Press the ADDRESS switch momentarily. This will display the address

Place the RUN, STOP, STEP switch to the RUN position. The system will sequence between the first and last channels at the rate determined by the clock divisor

Program the FUNCTION CONTROL SWITCH "DATA" will display the data of the operations on the front panel

If the RUN, STOP, STEP switch is placed in the STOP position, the system will continue sequencing to the last channel and stop

If the RUN, STOP, STEP switch is placed momentarily to the STEP position from the RUN position the system will step incrementally one channel in the sequence

SINGLE CHANNEL OPERATION FRONT PANEL

To operate the system on a single channel with will simulate [illegible] MODE operation via the front [illegible] and use [illegible] switch to the same channel [illegible] with the normal MANUAL position to operation

DATA DISPLAY

At any time the FIRST ADDRESS, LAST ADDRESS, CLOCK DIVISOR, CHANNEL ADDRESS, DIGITIZED DATA or the system's operating MODE may be viewed by pressing the particular FUNTCTION CONTROL SWITCH (momentary). DO NOT PRESS "ENTER" AS THIS WILL PACE THE DATA DESCRIBED BY THE DATA SWITCHES INTO THE RESPECTIVE REGISTER CHANGING THE USERS DESIRED SETUP.

NON OPERATING FUNCTIONS (VIA FRONT PANEL)

The following modes of operation which are available to be programmed via the rear panel during the REMOTE OPERATION and have the following limitations via the front panel. Refer to the CONTROL WORD chart in this section for bit definitions.

SPECIAL(MAY OR MAY NOT BE IMPLEMENTED DEPENDING ON USERS FUNCTIONS)

REMOTE/LOCAL(NOT AVAILABLE IN FRONT PANEL LOCAL MODE)

SEQUENTIAL/RANDOM(SEQUENTIAL ONLY WITH LOCAL CONTROL)

CLOCK DIVISOR (HAS A DEDICATED SWITCH FUNCTION ON FRONT PANEL)

FIRST ADDRESS " " " " "

LAST ADDRESS " " " " "

CAM WRITE (NOT AVAILABLE IN LOCAL MODE)

LOCAL LOCKOUT(MAY BE IMPLEMENTED BUT LOCKS OUT THE FRONT PANEL FROM ANY FURTHER PROGRAMMING AND CANNOT BE CORRECTED EXCEPT BY REMOVAL OF THE POWER FROM THE SYSTEM AND PERFORMING A POWER UP.

DATA DISPLAY

INTERFACING SYSTEM 82520-00 TO DR11W I/O

Please refer to the connector listing at the end of Section 1 for notes on specific signals.

This system is interfaced to DR11W I/O and therefor has special restrictions regarding the system control and operation.

Any time the interface wishes to send the system a set of data (setup control etc.) the interface will send the system an INITILIZE (MRESET) (FNCT2) signal via the separate connection (other than the 16 bit control word) on the rear of the chassis.

The next item to be entered is FFFF (RESET) accompanyied by a BUSY (INSTRB).

The next item entered is the control word (described later in this section).

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	WORD
0	0	1	0	0	0	0	1	0	0	1	1	1	0	1	0	DATA

This control word is entered by the strobe BUSY (INSTRB).

After the control word is entered the other data required to operate the system is entered each with a strobe BUSY in the following sequence.

INTERFACING SYSTEM 82950-00 TO DRTIW I/O

Please refer to the connector listing at the end of section 4 for
pin specific signals.

This system is interfaced to DRTIW I/O and therefore has
restrictions regarding the system configuration.

Any site the interface wishes to send the system a work or data
(serial etc) the interface will send the system a INITIAL
(CTRL/Z) signal via the separate connection (other than the
control word) at the rear of the chassis.

The next item to be entered is PHIP (CTRL/P) acknowledge by a
(INC <R>

The next item entered is the control word (described later in the
manual)

This control word is entered by the stub (Inside)

After the control word is entered the enter key
the system is ready to accept data with

Figure 1

CLOCK DIVISOR
FIRST CHANNEL OF A SEQUENCE
LAST CHANNEL OF A SEQUENCE
LAST WORD OF DATA

The LAST WORD OF DATA is the 16 bit control word with BITS 7 and 8 at logical "1".

When the RDY signal goes LO the system will run, sequencing from first channel to last channel and repeating until an INITILIZE signal is presented.

Handshake for the interface is provided by the CYCLE REQUEST and C1. Once the system is sending data to the interface, this interface cannot send data to the system without resending the INITIALIZE (MRESET) signal.

The system using the DR11W I/O is designed to operated in the sequential mode only. To simulate a random operation, program the FIRST and LAST channel addresses to the same channel, and operate in the sequential mode.

REMOTE PROGRAMMING AND OPERATION VIA THE STANDARD INTERFACE

The following is the description of the remote programming if the system is using a standard interface. In the case of special interfaces that may be limited in the handshake or have special DMA requirements some of the control capabilities and system operations may not be available. These special requirements or operations are presented earlier in this section.

The programming procedure begins with entering a 16 bit control word that tells the system in what modes (BURST, SEQUENTIAL, CAM WRITE, CLOCK SOURCE, CONTROL HANDSHAKE ENABLE) to operate, and what data it has to receive in order to operate in that mode. That data would be the CLOCK DIVISOR, FIRST/LAST CHANNEL, CHANNEL ADDRESS MEMORY DATA. All of these items are entered via the 16 bit connector J09 by the application of a STROBE. The various ways of operation are discussed in the following paragrphs.

RUN & RSO (COMMAND BITS 7 & 8)

These two bits (bits 7 and 8) are important in determining whether the input word (16 bits) is being used to input a command or to allow the system to RUN.

The RUN (7) and RSO (8) operate with the following rules.

IF THE RSO BIT (8) IS LO THE SYSTEM EXPECTS THAT THE DATA WORD ENTERED IS A MODE COMMAND. (REFERENCE I/O CONTROL WORD DEFINITION CHART.)

IF THE RSO BIT (8) IS HI THE SYSTEM CAN BE MADE TO RUN IN THE MODE DESIRED OR STOP BY ENTERING RUN BIT HI OR LO. (WITH STROBES)

RSO (8)	RUN (7)	DESCRIPTION OF OPERATION
0	1	PROGRAMMED GO Programs the system into the command mode. All other modes desired must be entered at this time (only those items that are desired to be changed, CLOCK DIVISOR, FIRST CHANNEL LAST CHANNEL, CAMEN OR CAMWIRTE, SEQUENTIAL OR RANDOM, REMOTE OR LOCAL, ETC). After entering the command mode the system requires that you enter the data for the mode options that you entered in the command mode. MANDATORY DATA ENTRY SEQUENCE CLOCK DIVISOR FIRST ADDRESS LAST ADDRESS CAM DATA After the last data that was required is entered the system will start to run automatically. No additional start signals are required. See BRIEF EXAMPLE #1

[illegible]

[illegible]

[illegible]

RSO (8)	RUN (7)	DESCRIPTION OF OPERATION
0	0	PROGRAMMED NOGO / STOP ON LAST CHANNEL Programs the system into the command mode. All other modes desired must be entered at this time (only those items that are desired to be changed, CLOCK DIVISOR, FIRST CHANNEL LAST CHANNEL, CAMEN OR CAMWIRTE, SEQUENTIAL OR RANDOM, REMOTE OR LOCAL, ETC). MANDATORY DATA ENTRY SEQUENCE CLOCK DIVISOR FIRST ADDRESS LAST ADDRESS CAM DATA After entering the command mode the system requires that you enter the data for the mode options that you entered in the command mode. After the last data that was required is entered the system will not start until the RUN (7) IS MADE HI and the RSO (8) MADE HI and a STROBE is supplied. To stop the system after a RSO=0, RUN=0 initialization and a RSO=1, RUN=1 start a FFFF word must be applied to the input and STROBED This combination RSO=0, RUN=0 may also be used to stop the system if the prior command was RSO=0, RUN=1. Set the bits 16 thru 9 to the previous mode command and set the data request lines 6,5,4,3,&1 to 0 and apply a strobe. To START the system after a RSO=0, RUN=0 stop command, place the command bits (16 thru 9 to previous mode selection and set RSO=0, RUN=1 and apply a strobe.
1	0	STOP COMMAND (RSO STOP) After established mode, & run, strobing this combination will stop the system on the last channel. EOC will have to be monitored to know when the last chan has been digitized. In order to start again DATA of FFFF must be entered. Then the desired start mode entered.
1	1	START COMMAND (RSO START) [PROGRAMMED NOGO] To start system, strobe this combination. See brief example #2. This start function only applies to a PROGRAMMED NOGO start method. The only way to stop after this start is by entering a data word FFFF.

		PROGRAMMED MODE / STOP OR LOAD CHANNEL
		Programs the system into the command mode.
		All other modes desired must be entered at
		this time (only those items that are desired
		to be changed, CLOCK DIVISOR, FIRST CHANNEL
		LAST CHANNEL, CAMAC OR CAMBUS, SEQUENTIAL
		OR RANDOM, REMOTE OR LOCAL, ETC).
		MANDATORY DATA ENTRY SEQUENCE
		CLOCK DIVISOR
		FIRST ADDRESS
		LAST ADDRESS
		CAM DATA
		After entering the command mode the system
		requires that you enter the data for the
		mode options that you entered in the command
		mode.
		After the last data that was
		entered the system will start until
		the RUN (7) IS MADE HI and the RDO (8) MAY
		HI and a STROBE is supplied.
		To stop the system after a "DEC. RUN=0
		initialization and a RESET, RUN=1 should
		a ERROR word must be received on the input and
		STROBED
		This combination RDO=0 RUN=0 may also
		to stop the system if the prior command was
		RDO=0, RUN=1. Wait the bits to allow for the
		previous more command and set two data cycles.
		Times 6,5,4,3,2,1 to 0 and apply a strobe.
		To START the system after a RDO=0, RUN=0 stop
		command, place the command bit (16 thru 1 to
		previous mode selection and set RDO=0, RUN
		and apply a strobe.
		STOP COMMAND PRO (STOP)
		After establishing mode, a run, stop or the
		communication will stop the system or the last
		channel. EOC will have to be monitored to
		know when the last chan was been digitized
		In order to start again IDLA OF PRTF must
		be entered. Then the desired start mode
		entered.
		START COMMAND (PRO START) PROGRAMMED MODE
		To start system, if the stop command
		The brief explanation is
		only applies to a PROGRAMMED mode
		method. The only way to stop a stop
		is by operating a different mode

BRIEF EXAMPLE (REMOTE PROGRAMMING) #1 "PROGRAMMED GO"

STEP 1 ... Enter the 16 bit control word using the data bits connector J09 followed by an INPUT STROBE (STROBE). Refer to control word definition chart in this section.

EXAMPLE:

This control word uses the CHANNEL RATE CLOCK with a division of 16 sequencing through channel locations 5 and 15. Enter this control word with the STROBE.

0 0 1 0 0 0 1 1 0 1 1 1 1 0 0 0 NOTE: BIT 7 HI, BIT 8 LO

MSB LSB

STEP 2 ... Enter data for any functions selected (using input data bits on connector J09 followed by a STROBE.

EXAMPLE: The following data words are required to be entered in the precise order as determined by the previous entry of the above control word.

CLOCK DIVIDER 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 W/STROBE

FIRST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 W/STROBE

LAST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 W/STROBE

MSB LSB

Because CAM WRITE (BIT 3) is not part of the STEP1 control word,

the system does not expect 124 channels of channel address to be entered following the LAST ADDRESS. It is assumed thet the CAM has been previously programmed or the CAM option is not included in this system.

These steps are dictated by the mode that was initially programmed in STEP number 1. With the mode that was described in STEP 1, the system expects that the next three (3) words that are strobed, are the data words for those options that were programmed.

Since the PROGRAMMED GO (RSO=LO, RUN=HI) was entered as part of the control bits in STEP 1, when the last data word is strobed and received, the system will start to run, sequencing from the first through the last channel and repeating. This will go on until another mode is programmed, a word of all one's (hex FFFF) is entered, or the STOP COMMAND (RSO=HI, RUN=LO) is entered.

STOP METHODS (AFTER A PROGAMMED GO START)

Setting the mode bits 16 thru 9 to the initial mode setup with RSO (BIT 8) LO and RUN (BIT 7) LO and the data request bits 6,5,4,3, & 1 set to LO followed by a STROBE, will stop a system on the last channel that was initialized in the PROGRAMMED GO mode. To start system again raise the RUN bit to HI and apply a STROBE (the mode bits 16 thru 9 must be set at the initial mode setup with the data request bits 6,5,4,3, & 1 set to LO). In this way the system knows that there are no requests to enter CLOCK DIVISOR, FIRST CHANNEL, ETC and will not expect new data to be entered for these attributes.

Setting RSO=1, RUN=0 will also stop the system on last channel. This is an RSO STOP that requires you to enter a FFFF before entering the desired starting mode. This operation does not change the programmed mode and the system can be started again with a RSO START (RSO=1, RUN=1) with out reestablishing the operating mode.

BRIEF EXAMPLE (REMOTE PROGRAMMING) #2 "PROGRAMMED NOGO"

STEP 1 ... Enter the 16 bit control word using the data bits connector J09 followed by an INPUT STROBE (STROBE). Refer to control workd definition chart in this section.

EXAMPLE:

This control word uses the CHANNEL RATE CLOCK with a division of 16 sequencing through channel locations 5 and 15. Enter this control word with the STROBE.

0 0 1 0 0 0 1 1 0 0 1 1 1 0 0 0 NOTE: BIT 7 LO, BIT 8 LO

MSB LSB

STEP 2 ... Enter data for any functions selected (using input data bits on connector J09 followed by a STROBE.

EXAMPLE: The following data words are required to be entered in the precise order as determined by the provious entry of the above control word.

CLOCK DIVIDER 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 W/STROBE

FIRST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 W/STROBE

LAST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 W/STROBE

MSB LSB

Because CAM WRITE (BIT 3) is not part of the STEP1 control word,

Sheet Example (REMOTE PROGRAMMING) #2 PROGRAMMED MODE

STEP 1 ... Enter the 16 bit control word using the data bits (MSB first
...? followed by an INPUT STROBE (STROBE). Refer to control word
definition chart in this section

Example:

This control word uses the CHANNEL MAKE CHECK with a duration of
3 sequencing through channel locations 5 out ... from t
control word with the STROBE.

0 0 1 0 0 0 1 1 0 0 1 1 : 0 0 0 MSB M F Z LSB RET 5 LD

MSB LSB

SIG ... Enter data for any functions selected (using resp data
... in connector J09 followed by a STROBE.

EXAMPLE: The following data words are required to be entered in
the precise order as determined by the previous entry of the 32 bit
control word.

CLOCK DEVICE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 WRITE

FIRST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 WRITE

LAST ADDRESS 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1

MSB LSB

Because CAN WRITE ... if ... not ...part of the ... control ...

the system does not expect 124 channels of channel address to be entered following the LAST ADDRESS. It is assumed thet the CAM has been previously programmed or not included in this system.

These steps are dictated by the mode that was initially programmed in step number 1. With the mode that was described in STEP 1 the system expects that the next three (3) words that are strobed, are the data words for those options that were programmed.

Since the PROGRAMMED NOGO (RSO=0, RUN=0) was entered as part of the control bits in STEP 1, when the last data word is strobed and received the system will NOT start to run.

To start the system running the RSO BIT (8) and the RUN BIT (7) must be set HI (START COMMAND) followed by a STROBE.

To stop the system enter FFFF with a STROBE.

To start the system running again the RSO BIT (8) and the RUN BIT (7) must be set HI (START COMMAND) followed by a STROBE.

CONTROL HANDSHAKE ENABLE (BIT 2)

If this bit is HI, all control words and data words will be acknowledged with a returned HANDSHAKE on the system input I/O.

If this bit is LO, all control words and data words except the last step will be acknowledged with a HANDSHAKE. The last step will be acknowledged with an EOC on the system output I/O. EOC signifying that the last step has been received and that the system has converted and the data is valid for reading.

It is recomended for system part number 82520-00 that the CONTROL HANDSHAKE ENABLE is enabled (HI) allowing handshake on the last data entry.

DATA ALL ONE'S (FFFF)

For system P/N 82520-00 an INITIALIZE (MRESET) performs the following task.

Entering all one's (FFFF) as a data word at any time (with one exception) resets the system. This reseting of the system includes:

STOPPING OF THE SYSTEM IMMEDIATELY.
DOES NOT CHANGE THE PREVIOUSLY PROGRAMMED MODE.

When the RUN mode is again entered the RSO bit must be up in order to use the previously programmed mode. If the RSO bit is LO the system expects that the data being entered is a MODE change.

If the system was in the middle of programming mandatory data required by the system (STEP 2), a FFFF will cause the system to forget where it was in the sequence of data entry and the user will have to begin the programming again starting with the command mode word (STEP 1). This may be used as an emergency exit during the data entry or running modes.

2.4 ALL ONE'S (FFFF)

For system P/N 82520-00 an INITIALIZE (MNEMONIC) performs the following

Entering all one's (FFFF) as a data word at any time with or
a location) resets the system. This resetting of the system includes:

1. CONTROL OF THE SYSTEM IMMEDIATELY.
MODE NOT CHANGE THE PREVIOUSLY PROGRAMMED MODE.

When the RUN mode is again entered the last bit must be up in order:
the previously programmed mode. If the MSB bit is up the system
expects that the data being entered is a MODE change.

If the system use in the middle of programming random data required
by the system (other 2), a FFFF will cause the system to forget where it
was in the sequence of data entry and the user will have to begin the
programming again starting with the command mnemonic word (SHIFT 1). This
can be used as an emergency exit during the data entry or running

I/O CONTROL WORD DEFINITION

MODE OR FUNCTION	MSB ---------- CONTROL WORD ---------- LSB															
	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SPECIAL_(16)																
LOCAL LOCKOUT_(15)																
REMOTE/LOCAL*_(14)																
EXT/INT* (CLOCK SOURCE)_(13)																
EXT/INT* (START SOURCE)_(12)																
BURST/CHANNEL RATE*(CLK MODE)_(11)																
CAMENABLE/CAMBYPASS*_(10)																
SEQUENTIAL/RANDOM*_(9)																
RUN STOP ONLY (RSO)_(8)																
RUN_(7)																
CLOCK DIVISOR_(6)																
FIRST ADDRESS_(5)																
LAST ADDRESS_(4)																
CAM WRITE_(3)																
CONTROL HANDSHAKE ENABLE_(2)																
CONTROL WORD_ EXTENSION_(1)																

NOTE: Whenever all ones (FFFF) are applied, the system will go to the INPUT CONTROL WORD MODE (and await its next control word) and sends reset to the CM SYSTEM digital I/O devices.

* ... INPUT DATA BITS are logic levels "1" for true and "0" for false. These are gated into the system by a separate strobe line (refer to User connection list).

EXPANDED PROGRAM EXAMPLE

STEP 1

Select the mode and data request bits.

SET MODES (CONTROL WORD)	BIT	SPECIAL NOTES
SPECIAL - NOT IMPLEMENTED	16	MSB
LOCAL LOCKOUT.....YES OR NO	15	A
REMOTE OR LOCAL OPERATION	14	A
EXTERNAL OR INTERNAL CLOCK SOURCE	13	A
EXTERNAL OR INTERNAL START SOURCE	12	A&D
CLOCK MODE.....BURST OR CHANNEL RATE	11	A
GMCAM MODE OR BYPAS CAM	10	A
SEQUENTIAL OR RANDOM MODE	9	A,C
SET RUN AND/OR RSO CONDITION	8,7	*A
SELECT CLOCK DIVISOR	6	A
SELECT FIRST ADDRESS	5	A
SELECT LAST ADDRESS	4	A
SELECT CAM WRITE	3	A,B
CONTROL HANDSHAKE ENABLE	2	A
CONTROL WORD EXTENSION	1	LSB

Set the modes desired (chart above) and enter the data with a strobe.

* RUN modes may be programmed as part of STEP 1 to automatically start the system following the entry of data. SPECIAL NOTE "A". (PROGRAMMED GO)

Alternately, the RUN modes may be set of a part of STEP 3 (after all data has been entered for functions selected .. PROGRAMMED NOGO).

PROGRAMMED PROCESSOR EXAMPLE

STEP 1

Select the mode and data request bits.

SET MODE (CONTROL WORD)	BIT	MODE	CTR-(CW)
SPECIAL - NOT IMPLEMENTED	7		
LOCAL LOAD/OUT ... YES OR NO	6	A	
REMOTE OR LOCAL OPERATION	5	A	
EXTERNAL OR INTERNAL CLOCK SOURCE	4	A	
CLOCK MODE ... BURST OR CHANNEL MAIN	3	A	
BROAM MODE OR BYPASS CAM	2	A	
RANDOM MO	1	A	C
PSC CONDITION	0		M

A RUN modes may be programmed as part of STEP 1 to automatically step the system following the entry of data. SELECT MODE "A" (MODE/RAM)

A separate RUN modes may be set up as part of (STEP 3 after the data has been entered for function selected . MODE/RAMPED CODED

STEP 2 DATA

Enter data for functions selected in order specified within the control word (moving from MSB to the LSB). Each data entry must be entered by a strobe.

MANDATORY DATA SEQUENCE
CLOCK DIVISOR
FIRST ADDRESS
LAST ADDRESS
CAM DATA
RANDOM ADDRESSES

No need to enter data if the control word did not contain the mode selection.

(EXAMPLE A): If you did NOT activate the CAM WRITE, the system will not expect you to enter data for the CHANNEL ADDRESS MEMORY.

(EXAMPLE B): If you did NOT activate the FIRST CHANNEL, the system will not expect you to enter data for the FIRST CHANNEL (assuming that it was programmed in an earlier sequence).

STEP 3 ENTER RUN MODE (RSO & RUN)

Special notes concerning implementation of RUN modes and STOP modes.

A ..... Functions which may have the programmed RUN modes (PROGRAMMED GO) thus avoiding STEP 3.

STEP 5 DATA

Enter data for functions selected in order specified within the control word (moving from MSB to the LSB). Each data entry must be entered by a strobe.

MANDATORY DATA SEQUENCE
CLOCK DIVISOR
1ST ADDRESS
LAST ADDRESS
CAM DATA
RANDOM ADDRESS

(EXAMPLE A). If you did not activate the CAM ENABLE, the system will not expect you to enter data for the CHANNEL ADDRESS MEMORY.

(EXAMPLE B) If you did NOT activate the FIRST CHANNEL, the system will not expect you to enter data for the FIRST CHANNEL (assuming that it was programmed in an earlier sequence).

STEP 3 ENTER RUN MODE (REG & RUN)

Special modes consecutive implementation of RUN modes and this mode

. . . Sometimes it may have the programmed RUN mode ...

...) , use ... Step STEP 3

B ..... This function requires a FIRST ADDRESS and a LAST ADDRESS to be programed before entering data into CHANNEL ADDRESS MEMORY. FIRST ADDRESS to LAST ADDRESS inclusively determine the area of memory where data will be written. All of these memory positions selected must be filled.

C ..... Random mode is selected as STEP 1 followed by entering data (STEP2) for each time a channel is to be converted (PROGRAMMED CO). Exiting from RANDOM mode requires a FFFF (HEX) data entry.

STEP 1 ..... PROGRAM RANDOM MODE ..... STROBE
STEP 2 ..... ENTER CHANNEL ADDRESS .... STROBE

Repeat step 2 as required.

The system will go to the addressed channel and convert. Exiting from this mode requires a FFFF data word be entered.

SEQUENTIAL WITH OR WITHOUT PROGRAMMABLE CLOCK

To utilize the sequential mode with programmable clock, the input control bit "9" must be TRUE.

To utilize the sequential mode without programmable clock, the input control bit "9" must be TRUE and the programmable clock divisor data zero. In this mode the system converts the multiplexer channels in sequence, one channel each time the STROBE is applied.

Exiting from this mode requires a FFFF (HEX) data entry.

3 ... This function requires a PIA(S) ADDRESS and a "LAST ADDRESS" to
a prestored before entering data into CHANNEL ADDRESS MEMORY. FIRST
ADDRESS to "LAST" address includes will determine the area of memory where
data will be written. All of these memory positions selected must be
filled.

2 Random mode is selected as STEP 1 followed by entering data
STEP 2 for each time a channel is to be converted (PROGRAM-MED CO-
Exiting from RANDOM mode requires a STEP (HEX) data entry.

STEP 1 . . . . PROGRAM RANDOM MODE .... ENTRY
STEP 2 . . . . ENTER CHANNEL ADDRESS ... ENTRY

Repeat step 2 as many as

The system will go to the addressed channel and convert. Exiting from
this mode requires a RESET must be entered

PROGRAMMING WITH OR WITHOUT PROGRAMMABLE CLOCK

To utilize the sequential mode with programmable clock, the input
control bit "2" must be TRUE

To utilize the sequential mode without programmable clock, the input
control bit "2" must be TRUE and the programmable clock six bit data
zero. In this mode the system converts the multiplexer channels
sed once, one channel each time the STROBE is applied

Exiting from this mode requires a RESET or ZERO data

D ..... Requires a RUN condition to enable EXTERNAL START. The external start line is a special input connector (BNC) separate from STROBE.

G L O S S A R Y

The following list contains basic definitions for the names and symbols used in the customer accessed interface connections. A complete list of the individual pin allocations is contained in the WIRE LIST located in Section 1 of the manual.

WORD LIST- SYSTEM 82520-00

CONTROL WORD
The 16 bit input word to include the modes and functions that the system will be set up to operate. This information is entered in what is know as the COMMAND MODE.

SPECIAL (MODE) BIT 16
Auxiliary function position for implementation of customer requested control features.

LOCAL LOCKOUT (MODE) BIT 15
Allows the computer or remote controller to "LOCKOUT the front panel controls. FRONT PANEL controls are no longer active.

REMOTE/LOCAL* BIT 14
Selects between local (front panel) and remote I/O control.

EXT/INT* (CLOCK SOURCE BIT 13)
Selects between local (internal) and remote (external) clock source.

EXT/INT* START SOURCE BIT 12
Selects between an internally set start function or external start (tied to user measurement).

BURST/CHAN CLOCK (MODE) BIT 11
Allows the GMDSRC clock to be operated either in the scan rate mode BURST) or in the channel rate mode (NON-BURST.

CAMEN/CAMBY* BIT 10
Enables (EN) GMCAM channel address memory or bypasses (BY) the GMCAM for mormal random or sequential channel addressing.

SEQ/RAN* BIT 9
Selects between sequential or random channel address mode.

RUN STOP ONLY BIT 8
There are two RUN bits, RUN and RSO which are used to start and stop the system. See the general operation instructions for additional information on the use of the RUN & RSO bits.

RUN BIT 7
There are two RUN bits, RUN and RSO which are used to start and stop the system. See the general operation instructions for additional information on the use of the RUN & RSO bits.

CLOCK DIVISOR BIT 6
A function bit that sets up the control word to accept clock divisor data.

FIRST ADDRESS BIT 5
A function bit that sets up the control word to accept first channel (or memory position) address data.

LAST ADDRESS BIT 4
A function bit that sets up the control word to accept last channel (or memory position) address data.

CAM WRITE BIT 3
A function bit that sets up the control word to accept channel address data sequentially entered into the GMCAM channel address memory.

The following lists contain basic definitions for the names and symbols used in the customer interface conventions. A complete list of the individual allocations is contained in the MAP82 [1/0] located in Section 3 of the manual.

[all] SYSTEM 82370-00

COMMAND WORD

The 16 bit input word to initiate the modes and functions that the system will be set up to operate. This information is entered in what is known as the COMMAND MODE

SPECIAL (MODE) BIT 15

Available only for customer for implementation of customer requested control features.

LOCAL LOCKOUT (MODE) BIT 15

Allows the computer or remote controller to "LOCKOUT" the front panel controls. FRONT PANEL controls are no longer active.

SYNC LOCAL* BIT 14

Selects between local (front panel) and remote I/O control.

SYNC (LOCK) BIT 13

Selects between local (internal) and remote (external) clock source.

SYNC SOURCE BIT 12

Selects between an internally set start function or external start (tied to user supplied) clock.

RUN CLOCK (MODE) BIT 11

It is the RUN/STOP clock to be selected either in the sync mode (BIT 13) or in the free running mode. (RUN MODE)

CAM/CAMAC BIT 10

Selects CAM/CAMAC channel addressing or bypasses addressing (BYP) the CAM/CAM for memory read/write or sequential channel addressing

CAM/CAMAC BIT 9

Selects between sequential or random channel address mode

RUN STOP (MODE) BIT 8

There are two RUN modes, CAM and RSO which are used to start and stop the system. See the operating instructions for additional information on the use of the RUN & RSO bits.

RUN BIT 7

There are two RUN modes, CAM and RSO which are used to start and stop the system. See the operating instructions for additional information on the use of the RUN & RSO bits.

LOCK DIVISOR BIT 6

A function bit that sets up the control word to select clock division data

FUNCTION ADDRESS BIT 5

A function bit that sets up the control word to select channel (or memory position) address data

CAM ADDRESS BIT 4

A function bit that sets up the control word to select channel (or memory position) address data

CAM WORD BIT 3

A function bit that sets up the control word to select channel address data sequentially entered into the CAMAC channel address memory

CONTROL HANDSHAKE ENABLE BIT 2

If this bit is HI, all control words and data words will be acknowledged with a returned handshake. If this bit is LO all but the last step entered will be acknowledged with the normal returned handshake. The last step will be acknowleged with and EOC. EOC signifying that the last step has been received and that the system has converted and data is available for reading.

Programming BIT HI would be used in systems where there are two sets of handshake signals, one set for input control and one set for output data control.

Programming BIT LO would be used in systems where there is only one set of handshake lines for the I/O control.

INPUT STROBE

Clocks the 16 bit control word and the 16 bit data words into the decoding register.

OUTPUT ACKNOWLEDGE

Handshakes input strobe to acknowledge receipt of control word or data.

MASTER RESET

Same function as "FFFF". Resets the system to INPUT CONTROL WORD MODE.

If this bit is HI, all control words and data words will be acknowledged with a returned handshake. If this bit is LO all but the last step entered will be acknowledged with the normal returned handshake The last step will be acknowledged with and EOC. EOC signifying that the last step has been received and that the system has converted and data is available for reading

Prompt return BIT will would be used in systems where there are two sets of handshake signals, one set for input control and one set for output data control

Programming BIT LO would be used in systems where there is only one set of handshake lines for the I/O control

BIT 1 BUSY

Locks the 12 bit control word, and the 16 bit data words into the decoding registers

2 CHANNEL MUX BIT

Handshake input strobe to acknowledge receipt of control and data words

CONVERT BIT

When function as "Prompt", forces the system to INPUT CONTROL WORD MODE

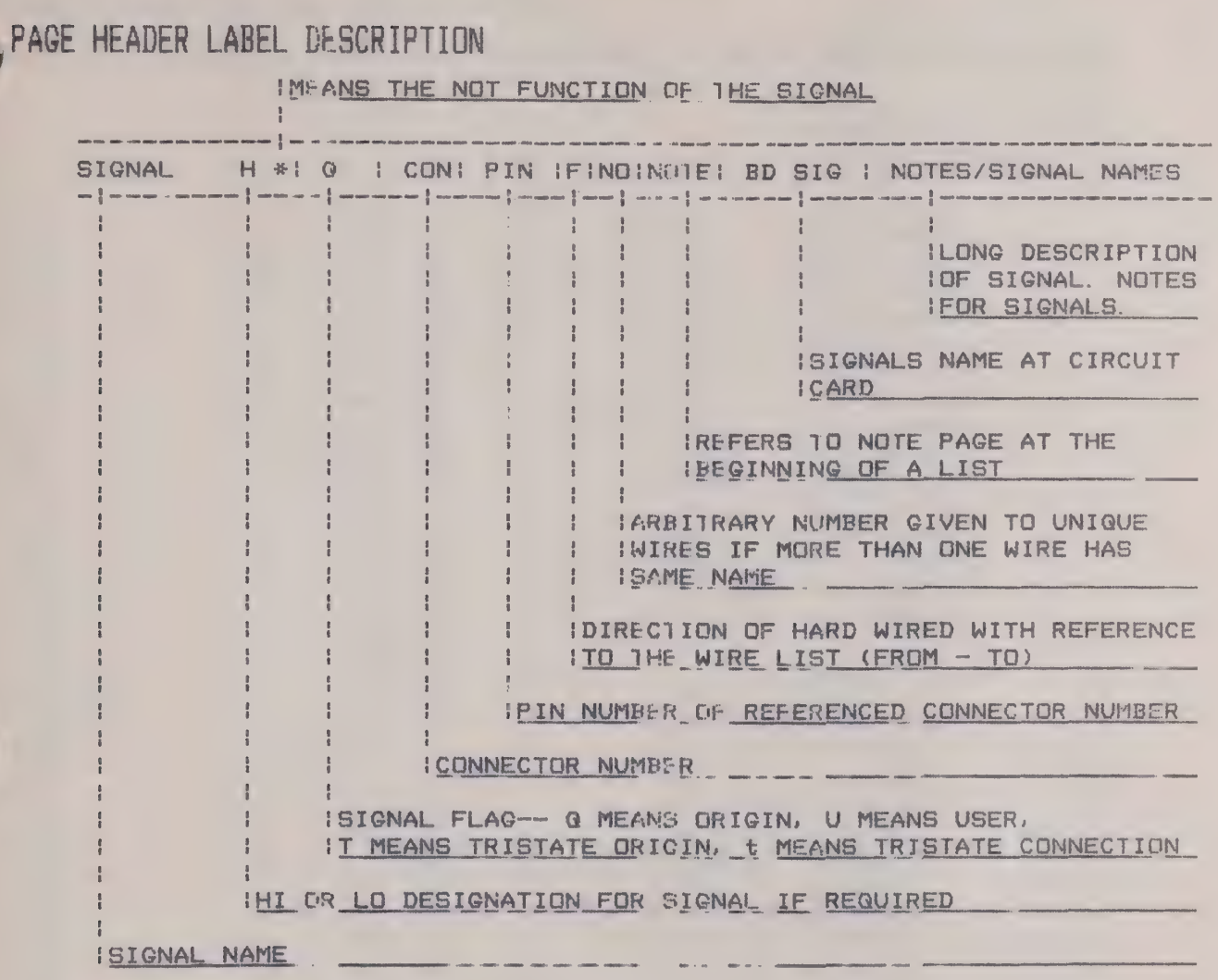
USER LIST --HOW TO USE--

The heading that appears on the top of each page of the USER LIST is described in the following paragraph.

USER LIST

This list contains the alphabetical listing of the connections that the user would require for interfaceing. This list is sorted by the "J" NUMBER and PIN number.

PAGE HEADER LABEL DESCRIPTION

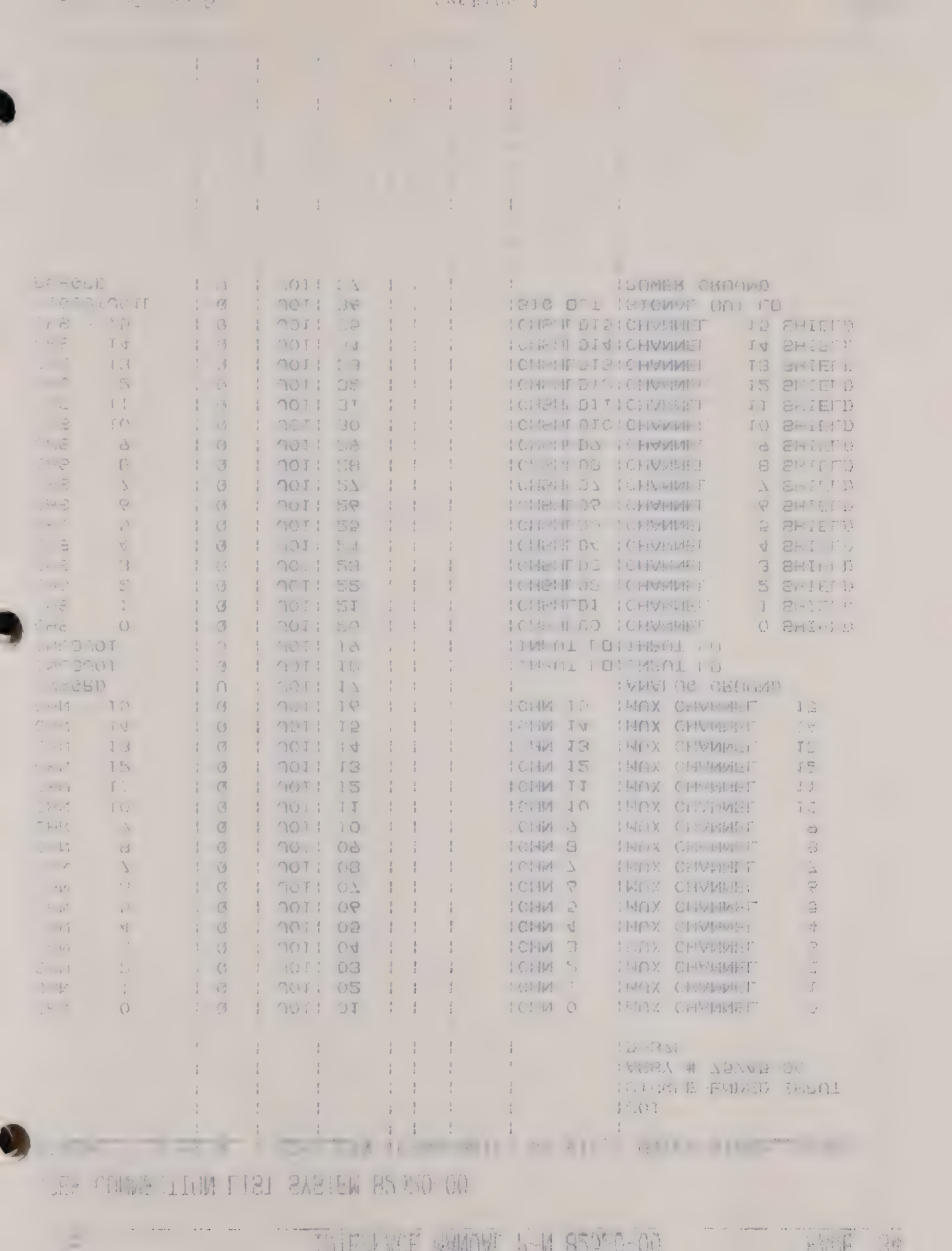

MEANS THE NOT FUNCTION OF THE SIGNAL
SIGNAL
H
*
Q
CON
PIN
F
NO
NOTE
BD SIG
NOTES/SIGNAL NAMES
LONG DESCRIPTION OF SIGNAL. NOTES FOR SIGNALS.
SIGNALS NAME AT CIRCUIT CARD
REFERS TO NOTE PAGE AT THE BEGINNING OF A LIST
ARBITRARY NUMBER GIVEN TO UNIQUE WIRES IF MORE THAN ONE WIRE HAS SAME NAME
DIRECTION OF HARD WIRED WITH REFERENCE TO THE WIRE LIST (FROM - TO)
PIN NUMBER OF REFERENCED CONNECTOR NUMBER
CONNECTOR NUMBER
SIGNAL FLAG-- Q MEANS ORIGIN, U MEANS USER, T MEANS TRISTATE ORIGIN, t MEANS TRISTATE CONNECTION
HI OR LO DESIGNATION FOR SIGNAL IF REQUIRED
SIGNAL NAME

PAGE HEADER LABEL DESCRIPTION

SIGNAL	H *	Q	CONN PIN IF DIFFERENT FROM BD SIG	FOREIGN SIGNAL NAME
				LONG DESCRIPTION
				FOR SIGNAL MNEMO
				FOR SIGNAL B
				SIGNAL NAME AT OTHER E
				CARD
				REFERS TO NOTE PAGE AT TL
				BEGINNING OF LIST
				ARBITRARY NUMBER G.REN TO UNIQUE
				WIDER IF MORE THAN ONE WIRE
				CONN NAME
				DIRECTION OF HDPW WIRED WITH REFERENCE
				TO THE WIRE LIST FROM TO
				PIN NUMBER OF CONNECTOR MNEMONIC
				CONNECTOR NUMBER
				SIGNAL FLAG -- 0 MEANS ORIGIN, 1 MEANS USER
				T MEANS TRISTATE ORIGIN, F MEANS TRISTATE CONNECTION
				NI OR LO DESIGNATION FOR SIGNAL IF REQUIRED

USER CONNECTION LIST SYSTEM 82520-00

SIGNAL	H	*	G	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
										J01
										SINGLE-ENDED INPUT
										ASSY # 75745-00
										D-37S
CHN 0			Q	J01	01				CHN 0	MUX CHANNEL 0
CHN 1			Q	J01	02				CHN 1	MUX CHANNEL 1
CHN 2			Q	J01	03				CHN 2	MUX CHANNEL 2
CHN 3			Q	J01	04				CHN 3	MUX CHANNEL 3
CHN 4			Q	J01	05				CHN 4	MUX CHANNEL 4
CHN 5			Q	J01	06				CHN 5	MUX CHANNEL 5
CHN 6			Q	J01	07				CHN 6	MUX CHANNEL 6
CHN 7			Q	J01	08				CHN 7	MUX CHANNEL 7
CHN 8			Q	J01	09				CHN 8	MUX CHANNEL 8
CHN 9			Q	J01	10				CHN 9	MUX CHANNEL 9
CHN 10			Q	J01	11				CHN 10	MUX CHANNEL 10
CHN 11			Q	J01	12				CHN 11	MUX CHANNEL 11
CHN 12			Q	J01	13				CHN 12	MUX CHANNEL 12
CHN 13			Q	J01	14				CHN 13	MUX CHANNEL 13
CHN 14			Q	J01	15				CHN 14	MUX CHANNEL 14
CHN 15			Q	J01	16				CHN 15	MUX CHANNEL 15
ANAGRD			U	J01	17					ANALOG GROUND
INLOJ01			Q	J01	18				INPUT LO	INPUT LO
INLOJ01			U	J01	19				INPUT LO	INPUT LO
CHS 0			Q	J01	20				CHSHLD0	CHANNEL 0 SHIELD
CHS 1			Q	J01	21				CHSHLD1	CHANNEL 1 SHIELD
CHS 2			Q	J01	22				CHSHLD2	CHANNEL 2 SHIELD
CHS 3			Q	J01	23				CHSHLD3	CHANNEL 3 SHIELD
CHS 4			Q	J01	24				CHSHLD4	CHANNEL 4 SHIELD
CHS 5			Q	J01	25				CHSHLD5	CHANNEL 5 SHIELD
CHS 6			Q	J01	26				CHSHLD6	CHANNEL 6 SHIELD
CHS 7			Q	J01	27				CHSHLD7	CHANNEL 7 SHIELD
CHS 8			Q	J01	28				CHSHLD8	CHANNEL 8 SHIELD
CHS 9			Q	J01	29				CHSHLD9	CHANNEL 9 SHIELD
CHS 10			Q	J01	30				CHSHLD10	CHANNEL 10 SHIELD
CHS 11			Q	J01	31				CHSHLD11	CHANNEL 11 SHIELD
CHS 12			Q	J01	32				CHSHLD12	CHANNEL 12 SHIELD
CHS 13			Q	J01	33				CHSHLD13	CHANNEL 13 SHIELD
CHS 14			Q	J01	34				CHSHLD14	CHANNEL 14 SHIELD
CHS 15			Q	J01	35				CHSHLD15	CHANNEL 15 SHIELD
SIGOUTJ01L			Q	J01	36				SIG OUT	SIGNAL OUT LO
PWRGRD			U	J01	37					POWER GROUND



SIGNAL	H *	Q	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
									CONNECTOR J09
									DIGITAL INPUT
									D-37S
INDATA32K		Q	J09	01	F	01	09		INPUT DATA BIT 32K
INDATA16K		Q	J09	02	F	01	09		INPUT DATA BIT 16K
INDATA8K		Q	J09	03	F	01	09		INPUT DATA BIT 8K
INDATA4K		Q	J09	04	F	01	09		INPUT DATA BIT 4K
INDATA2K		Q	J09	05	F	01	09		INPUT DATA BIT 2K
INDATA1K		Q	J09	06	F	01	09		INPUT DATA BIT 1K
INDATA512		Q	J09	07	F	01	09		INPUT DATA BIT 512
INDATA256		Q	J09	08	F	01	09		INPUT DATA BIT 256
INDATA128		Q	J09	09	F	01	09		INPUT DATA BIT 128
INDATA64		Q	J09	10	F	01	09		INPUT DATA BIT 64
INDATA32		Q	J09	11	F	01	09		INPUT DATA BIT 32
INDATA16		Q	J09	12	F	01	09		INPUT DATA BIT 16
INDATA8		Q	J09	13	F	01	09		INPUT DATA BIT 8
INDATA4		Q	J09	14	F	01	09		INPUT DATA BIT 4
INDATA2		Q	J09	15	F	01	09		INPUT DATA BIT 2
INDATA1		Q	J09	16	F	01	09		INPUT DATA BIT 1
INSTRB		Q	J09	17	F	01	09		INPUT STROBE
ACKOUT		U	J09	18	F	01	09		ACKNOWLEDGE OUTPUT
BIAS		U	J09	19	F	01	09		+ 5 VOLT BIAS
MRESET		U	J09	20	F	01	09		MASTER RESET
RDY		Q	J09	21	F	01	09		BUS READY
CYCREQ		U	J09	22	F	01	09		DMA REQUEST
MISDAT		U	J09	23	F	01	09		MISSED DATA
FNCT 1		Q	J09	24	F	01	09		FUNCTION BIT 1
C1		U	J09	25	F	01	09		BUS DIRECTION CONTROL
DIGGRD		U	J09	26	F	13	09		DIGITAL GROUND
DIGGRD		U	J09	27	F	12	09		DIGITAL GROUND
DIGGRD		U	J09	28	F	11	09		DIGITAL GROUND
DIGGRD		U	J09	29	F	10	09		DIGITAL GROUND
DIGGRD		U	J09	30	F	09	09		DIGITAL GROUND
DIGGRD		U	J09	31	F	08	09		DIGITAL GROUND
DIGGRD		U	J09	32	F	07	09		DIGITAL GROUND
DIGGRD		U	J09	33	F	06	09		DIGITAL GROUND
DIGGRD		U	J09	34	F	05	09		DIGITAL GROUND
DIGGRD		U	J09	35	F	04	09		DIGITAL GROUND
DIGGRD		U	J09	36	F	03	09		DIGITAL GROUND
DIGGRD		U	J09	37	F	02	09		DIGITAL GROUND

SIGNAL	H	*	G	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
										CONNECTOR J10
										DIGITAL OUTPUT
										D-37S
OUTDATA1			U	J10	01	T	64	07		OUT DATA SIGN-
OUTDATA2			U	J10	02	T	64	07		OUT DATA SIGN-
OUTDATA3			U	J10	03	T	64	07		OUT DATA 8192
OUTDATA4			U	J10	04	T	64	07		OUT DATA 4096
OUTDATA5			U	J10	05	T	64	07		OUT DATA 2048
OUTDATA6			U	J10	06	T	64	07		OUT DATA 1024
OUTDATA7			U	J10	07	T	64	07		OUT DATA 512
OUTDATA8			U	J10	08	T	64	07		OUT DATA 256
OUTDATA9			U	J10	09	T	64	07		OUT DATA 128
OUTDATA10			U	J10	10	T	64	07		OUT DATA 64
OUTDATA11			U	J10	11	T	64	07		OUT DATA 32
OUTDATA12			U	J10	12	T	64	07		OUT DATA 16
OUTDATA13			U	J10	13	T	64	07		OUT DATA 8
OUTDATA14			U	J10	14	T	64	07		OUT DATA 4
OUTDATA15			U	J10	15	T	64	07		OUT DATA 2
OUTDATA16			U	J10	16	T	64	07		OUT DATA 1
OUTFLAG			U	J10	17	T	64	07		OUTPUT FLAG
DIGGRD			U	J10	20	T	40	07		DIGITAL GROUND
DIGGRD			U	J10	21	T	39	07		DIGITAL GROUND
DIGGRD			U	J10	22	T	38	07		DIGITAL GROUND
DIGGRD			U	J10	23	T	37	07		DIGITAL GROUND
DIGGRD			U	J10	24	T	36	07		DIGITAL GROUND
DIGGRD			U	J10	25	T	35	07		DIGITAL GROUND
DIGGRD			U	J10	26	T	34	07		DIGITAL GROUND
DIGGRD			U	J10	27	T	33	07		DIGITAL GROUND
DIGGRD			U	J10	28	T	32	07		DIGITAL GROUND
DIGGRD			U	J10	29	T	31	07		DIGITAL GROUND
DIGGRD			U	J10	30	T	30	07		DIGITAL GROUND
DIGGRD			U	J10	31	T	29	07		DIGITAL GROUND
DIGGRD			U	J10	32	T	28	07		DIGITAL GROUND
DIGGRD			U	J10	33	T	27	07		DIGITAL GROUND
DIGGRD			U	J10	34	T	26	07		DIGITAL GROUND
DIGGRD			U	J10	35	T	25	07		DIGITAL GROUND
DIGGRD			U	J10	36	T	24	07		DIGITAL GROUND
DIGGRD			U	J10	37	T	23	07		DIGITAL GROUND

SIGNAL	H	*	Q	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
										J14
										REAR PANEL BNC
EXTSRC		*	U	J14	'C'	F	01	11		EXTERNAL CLOCK *
EXTSRC SH			U	J14	'S'	F	01	11		EXTERNAL CLOCK * SHIE

SIGNAL	H *	Q	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
									J15
									REAR PANEL BNC
EXTSTRT		U	J15	'C'	F	01	11		EXTERNAL START
EXTSTRT SH		U	J15	'S'	F	01	11		EXTERNAL START SHIELD

SIGNAL	H *	G	CON	PIN	F	NO	NOTE	BD SIG	NOTES/SIGNAL NAMES
									GROUND POST
									ANALOG GROUND
									SCREW TERMINAL
GRD		U	JGR	. . S	T	30	01		ANALOG GROUND

SECTION 2

DRAWINGS

DRAWINGS

DRAWINGS

NOTE:
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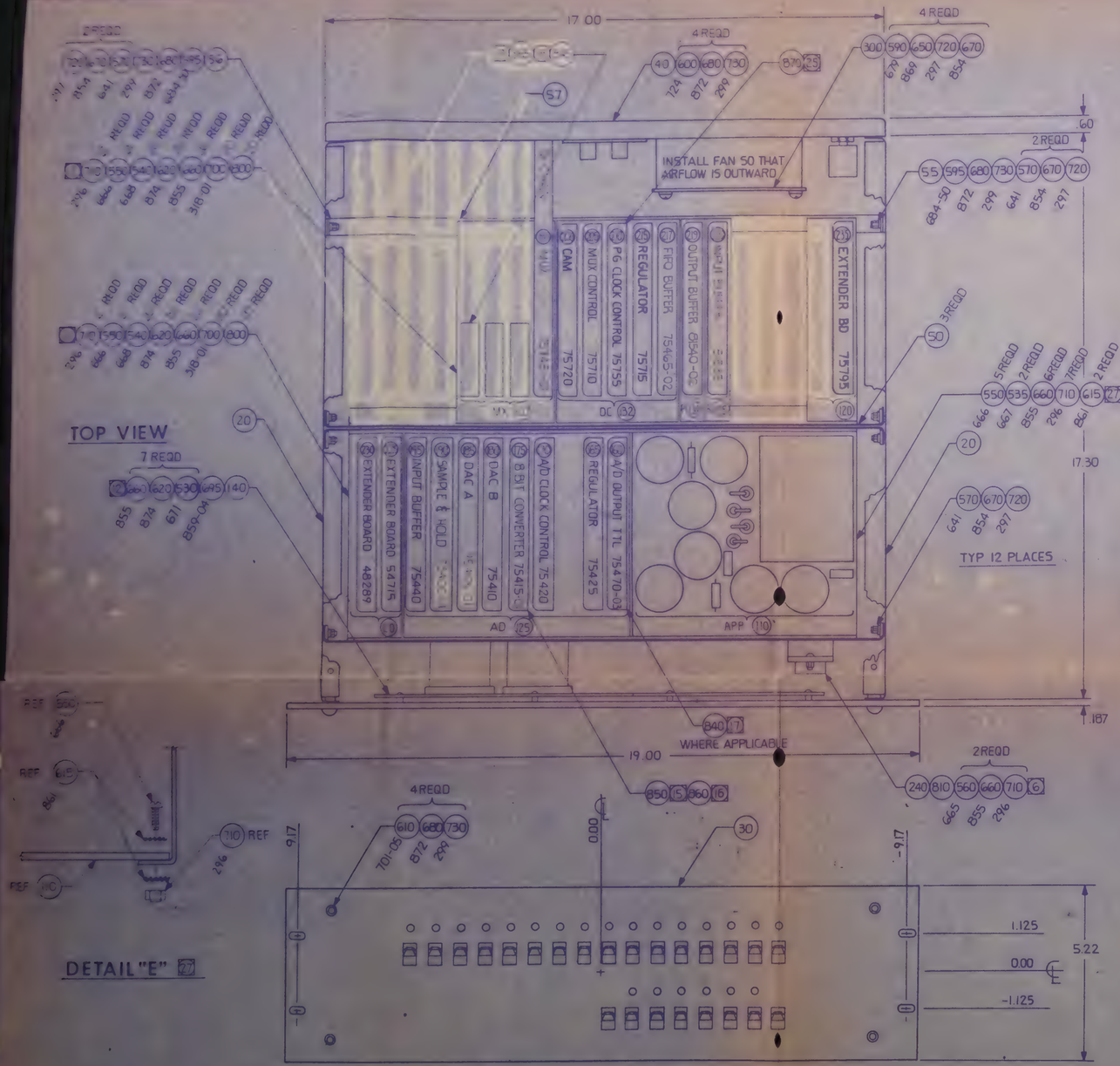


REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

25 BEND OR CLIP OFF ONE PRONG OF PLUG (ITEM 785) BEFORE INSTALLATION.

27 INSTALL E.T. WASHERS (ITEM 615) IN LOWER RIGHT MOUNTING HOLE PER DETAIL "E".

26 MOUNT CONNECTOR ON OUTSIDE OF REAR PANEL.

24 INSTALL INTEGRATED CIRCUIT 9977-00 (ITEM 870) IN U12 POSITION ON PG CLOCK CONTROL (ITEM 210), AND STRAP A-C.

23 MOUNT KEYWAY DOWN (ITEM 310).

22 J10 IS SUPPLIED WITH CABLE (ITEM 245).

21 J9 IS SUPPLIED WITH CABLE (ITEM 245).

20 INSTALL SPACER (ITEM 65) ON INSIDE OF REAR PANEL.

19 INSTALL CABLE (ITEM 247, [illegible] DWG NO 82522).

18 INSTALL HOUSING (ITEM 855) OVER CONTACTS (ITEM 845) ON COMPONENT SIDE.

17 INSTALL CONTACTS (ITEM 845) ON COMPONENT SIDE.

16 INSTALL POST (ITEM 840) ON CIRCUIT SIDE.

15 INSTALL HOUSING (ITEM 860) OVER CONTACTS (ITEM 850) ON COMPONENT SIDE.

14 INSTALL CONTACTS (ITEM 850) ON COMPONENT SIDE.

13 FOR SHIPPING KIT SEE DWG NO [illegible] 078.

13 INSTALL CONNECTOR SO THAT PIN ONE IS AT TOP LEFT POSITION.

12 APPLY SILICONE GREASE TO MICA WASHER (ITEM 685) ON LAMP DRIVER (ITEM 140) AND INSTALL WASHER BETWEEN REGULATOR & FRONT PANEL (ITEM 30) PER DETAIL "C" WHERE APPLICABLE.

11 INSTALL CARD GUIDES (ITEM 800) AS SHOWN IN DETAIL "B" WHERE APPLICABLE.

10 INSTALL SHIELDS AS SHOWN IN DETAIL "A" WHERE APPLICABLE.

9 INSULATE BARE TERMINALS.

8 ALL DIMENSIONS ARE FOR REFERENCE ONLY.

7 TOP COVER (ITEM 15) REMOVED FOR CLARITY ON TOP VIEW.

6 INSTALL THERMOSTAT AS SHOWN IN DETAIL "D".

5 FOR CONNECTOR LIST SEE DWG NO. 82520-WL.

4 FOR SIGNAL LIST SEE DWG NO. 82520-WL.

3 FOR WIRE LIST SEE DWG NO. 82522.

2 FOR GLOSSARY SEE DWG NO. 82520-WL.

1 FOR USER CONNECTION SEE DWG NO. 82520-WL.

NOTE: UNLESS OTHERWISE SPECIFIED.

UNLESS OTHERWISE SPECIFIED	BY	DATE
MECHANICAL DWG TOLERANCES	DWN	1-1-85
X ± .050 ANGULAR ± 0° 30'	CHK	
XX ± .005	ENG	
XXX ± .005 MACH. SURF.	APP	
THREADS: CLASS 2A OR 2B		
REMOVE BURRS & SHARP EDGES .020 MAX.		
MACH. FILLET RADIUS .020 R MAX.		
MACH. SURF. FLAT WITHIN .001 IN/IN		
OTHER SURF. FLAT WITHIN .005 IN/IN		
ELECTRICAL DWG DESIGNATIONS		
REFERENCE DESIGNATIONS ARE ABBREVIATED PREFIX, THE DESIGNATION WITH UNIT NUMBER OR ASSEMBLY DESIGNATION OR BOTH.	NEXT ASSY	

TITLE: GMAD-2A ISB 2'S COMPLEMENT, 16CH SE MUX, 4K FIFO, DRIIW

MATL

FINISH

PRESTON

SIZE D | 82520

SCALE 1:2 | SH 1 OF 4

MASTER 148

TITLE: GMAD-2A 15B 16CH SE MUX
DWG NO. 82520-00 REV .....
SHEET....OF....

PRESTON SCIENTIFIC INC.
PRINTED 08/03/83

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
10	1	75803-00	COVER TOP & BOTTOM	D
15	1	75803-04	COVER TOP & BOTTOM	D
20	2	75802-00	PANEL SIDE	D
30	1	75704-01	PANEL FRONT GMAD-2A	D
40	1	75708-03	PANEL REAR	D
50	3	40457-00	SUPPORT INTERCONNECT	C
55	1	75706-00	BRACKET SUPPORT RIGHT SIDE	A
56	1	75706-01	BRACKET SUPPORT LEFT SIDE	A
57	1	75707-00	SUPPORT INTERCONNECT	C
60	1	75760-00	PLATE CONNECTOR	B
63	7	75806-00	PLATE COVER	A
65	1	79773-00	SPACER STRAIN RELIEF	A
70	1	81278-00	SHIPPING KIT	A
80	1	55742-00	FEED THRU TERMINAL ASSY	B
95	1	54774-01	POWER TAG	A
110	1	75455-00	P.C. ASSY POWER SUPPLY	AP
120	2	80084-00	ROUTING INTERCONNECT BLANK 2	C
125	1	75436-00	D&R ASSY BACKPLANE	C
130	1	75726-00	D&R ASSY BACKPLANE	C
132	1	81846-00	D&R ASSY BACKPLANE	C
134	1	81373-00	D&R ASSY BACKPLANE	C
135	1	75763-00	D&R ASSY BACKPLANE	C
140	1	75735-00	P.C. ASSY LAMP DRIVE/SWITCH	BP
160	1	75470-03	P.C. ASSY A/D OUTPUT TTL	AP
165	1	75425-00	P.C. ASSY REGULATOR	AP
170	1	75420-00	P.C. ASSY A/D CLOCK CONTROL	AP
175	1	75415-01	P.C. ASSY 8 BIT CONVERTER	AP
180	1	75410-00	P.C. ASSY DAC B	AP
185	1	75405-01	P.C. ASSY DAC A	AP
190	1	75400-01	P.C. ASSY SAMPLE & HOLD	AP
195	1	75440-00	P.C. ASSY DIFF BUFFER AMP	AP
198	1	75745-01	P.C. ASSY 16CH QUASI DIFF MUX	BP
200	1	75720-00	P.C. ASSY CAM	AP
205	1	75710-00	P.C. ASSY MUX CONTROL	AP
210	1	75755-00	P.C. ASSY PG CLOCK CONTROL	AP
215	1	75715-00	P.C. ASSY REGULATOR	AP
217	1	75465-02	P.C. ASSY FIFO BUFFER	AP
219	1	81540-02	P.C. ASSY OUTPUT LINE DRIVER	AP
220	1	81535-00	P.C. ASSY INPUT BUFFER DR11-W	AP
225	1	54715-00	P.C. ASSY EXTENDER BOARD	A
230	1	48289-00	D&R ASSY EXTENDER	C
235	1	75795-00	P.C. ASSY EXTENDER BOARD	A
240	1	75439-00	BRACKET THERMOSTAT	A
245	2	75750-00	CABLE REAR PANEL	C
247	1	75751-00	CABLE INTERCONNECT	C
248	1	80153-00	CABLE INTERCONNECT	C
249	1	82521-00	CABLE INTERFACE DR11-W	A
250	1	958-01	CORD POWER	
255	1	2-21	BUSHING STRAIN RELIEF	
260	2	158-09	CONNECTOR BNC	

TITLE: GMAD-2A 15B 16CH SE MUX
DWG NO. 82520-00 REV .....
SHEET....OF....

PRESTON SCIENTIFIC INC.
PRINTED 08/03/83

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
285	1	4-01	PLUG HOLE 1/2	
290	1	256-04	FAN 115 CFM	
300	2	257-01	FINGER GUARD	
310	1	754-04	SWITCH TOGGLE	
330	1	265-00	FUSE 1AMP 3AG SLO-BLO	
340	1	274-04	FUSEHOLDER	
420	1	972-01	CHASSIS SLIDE	
470	A/R	997-07	WIRE 18 AWG	WHITE
480	A/R	992-10	WIRE 22 AWG	WHITE
490	A/R	989-00	WIRE 22 AWG	
500	A/R	949-00	TUBING	
505	A/R	802-50	TUBING HYSHRINK WHITE	
510	A/R	993-20	CABLE RG174/U	
520	A/R	994-05	WIRE 22 AWG	BLACK/WHITE
521	A/R	797-06	TERMINAL QUICK DISC MALE	
522	A/R	797-05	TERMINAL QUICK DISC FEMALE	
523	14	41-25	CLIP CANOE	
525	2	223-05	JACK SOCKET PAIR	
530	7	671-00	SCREW PHMS 4-40 X 7/8	
535	2	667-00	SCREW PHMS 4-40 X 7/16	
540	40	668-00	SCREW PHMS 4-40 X 1/2	
550	15	666-00	SCREW PHMS 4-40 X 3/8	
560	6	665-00	SCREW PHMS 4-40 X 5/16	
570	16	641-00	SCREW FHMS 6-32 X 3/8	
580	1	674-00	SCREW PHMS 6-32 X 5/16	
590	8	679-00	SCREW PHMS 6-32 X 3/4	
595	2	684-50	SCREW PHMS 10-32 X 7/16	
600	4	724-00	SCREW HEX HD 10-32 X 3/8	
610	4	701-05	SCREW BUT 10-32 X 1/2	
615	2	861-00	WASHER E.T. #4	
617	1	863-02	WASHER E.T. #8	
620	47	874-00	WASHER LOCK #4	
650	8	869-00	WASHER FLAT #6 STD	
660	69	855-00	WASHER FLAT #4 SM	
670	24	854-00	WASHER FLAT #6 SM	
680	10	872-00	WASHER FLAT #10	
685	1	857-07	WASHER FLAT INSULATING MICA	
695	1	859-04	WASHER SHOULDER #4 SM NYLON	
700	40	318-01	NUT 4-40	
710	23	296-00	NUT LOCK 4-40	
720	25	297-00	NUT LOCK 6-32	
730	10	299-00	NUT LOCK 10-32	
735	1	794-00	LUG CRIMP	
740	50	261-14	FERRULE TERMASHIELD	
750	100	262-00	FERRULE	
800	40	40341-00	GUIDE CARD	D
810	1	800-02	THERMOSTAT	
840	13	226-29	POST FEED-THRU STRIP	
845	8	226-34	CONTACT STRIP	
850	26	226-28	CONTACT STRIP	

PARTS LIST

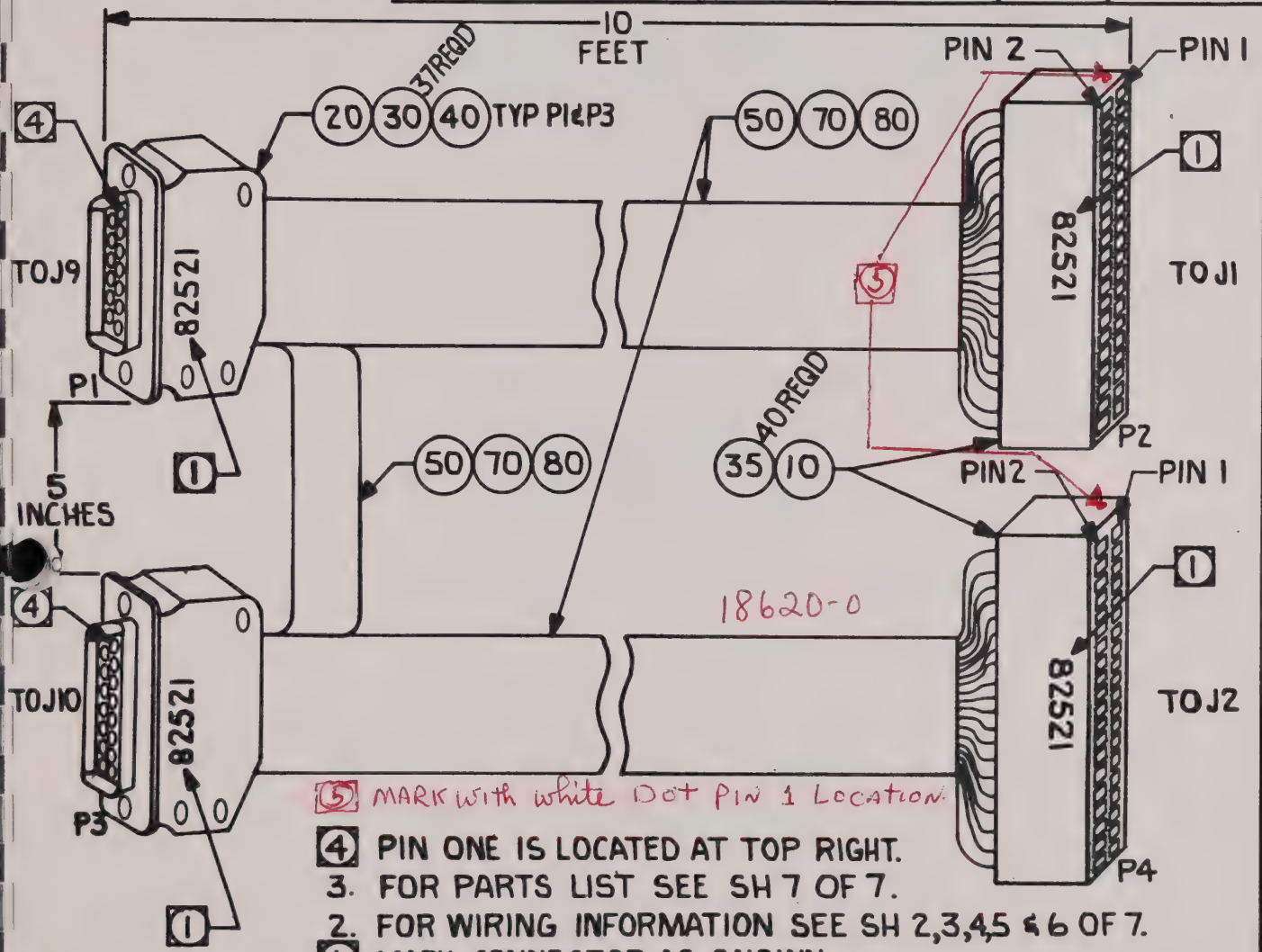
TITLE: GMAD-2A 15B 16CH SE MUX
DWG NO. 82520-00 REV .....
SHEET....OF....

PRESTON SCIENTIFIC INC.
PRINTED 08/03/83

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
855	4	226-33	HOUSING CONNECTOR 25 DUAL POS	
860	13	226-27	HOUSING CONNECTOR 50 DUAL POS	
870	1	9977-00	INTEGRATED CIRCUIT	A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



5 MARK with white Dot PIN 1 Location

4 PIN ONE IS LOCATED AT TOP RIGHT.

3. FOR PARTS LIST SEE SH 7 OF 7.

2. FOR WIRING INFORMATION SEE SH 2,3,4,5 & 6 OF 7.

1 MARK CONNECTOR AS SHOWN.

NOTE: UNLESS OTHERWISE SPECIFIED.

BY	DATE
DWN M. Lowley	7.7.83
CHK Rudaman	7.8.83
ENG D.C.	7.8.83
APP	

TITLE: INTERFACE CABLE DR11-W

MAT'L

FINISH

NEXT ASSY

SIZE: A

PRESTON
SCIENTIFIC INCORPORATED
805 East Cerritos Ave., Anaheim, Calif. 92805
Tel. (714) 776-6400

82521

SCALE

SH 1 OF 7

BISHOP GRAPHICS/ACCUPRESS
REORDER NO. A20698

FROM	TO

WIRE LIST PIN CONNECTION LOCATION INFORMATION

THE WIRE LIST PIN DESIGNATIONS ARE REFERENCED TO INPUT/OUTPUT CONNECTORS AS WELL AS THE INTERCONNECT CARDS, FRONT PANEL SWITCHES, POTENTIOMETERS, AND TEST POINTS. THE FOLLOWING INFORMATION DESCRIBES THE NOMENCLATURE DESIGNATIONS AND THEIR MEANING.

	_SECTION DESIGNATION__				
	PIN			PIN	
SIGNAL NAME	XX	XX	SIGNAL NAME	XX	XX

SECTIONS ARE DESCRIBED AS FOLLOWS

J = INDICATES CONNECTOR
S = INDICATES SWITCH
R = INDICATES POTENTIOMETER
TP = INDICATES TEST POINT

A, B, C, D, ETC. INDICATES INTERCONNECT BOARD

		FROM	TO
10	P	WIRE LIST, INTERFACE CABLE	
20		P/N 82521-00	
30	1	FOR CABLE LENGTH SEE PAGE 1	
40	1	NOTE UNLESS OTHERWISE SPECIFIED	
50		ALL WIRE IS TO BE RG 174/U	
60	1	NOTE 01 24 AWG	
70		NOTE 02 % INDICATES DOUBLE PIN	

		FROM			TO			
80	P	DIGITAL I/O			DIGITAL I/O			
90		37D PIN			40 PIN HEADER			
100	1	INDATA 32K	P1	1	INDATA 32K	P2	1	
110		SHIELD 32K	%P1	26	SHIELD 32K	%P2	17	
120		INDATA 16K	P1	2	INDATA 16K	P2	3	
130		SHIELD 16K	%P1	26	SHIELD 16K	%P2	17	
140		INDATA 8K	P1	3	INDATA 8K	P2	5	
150		SHIELD 8K	%P1	27	SHIELD 8K	%P2	18	
160		INDATA 4K	P1	4	INDATA 4K	P2	7	
170		SHIELD 4K	%P1	27	SHIELD 4K	%P2	18	
180		INDATA 2K	P1	5	INDATA 2K	P2	9	
190		SHIELD 2K	%P1	28	SHIELD 2K	%P2	20	
200		INDATA 1K	P1	6	INDATA 1K	P2	11	
210		SHIELD 1K	%P1	28	SHIELD 1K	%P2	20	
220		INDATA 512	P1	7	INDATA 512	P2	13	
230		SHIELD 512	%P1	29	SHIELD 512	%P2	22	
240		INDATA 256	P1	8	INDATA 256	P2	15	
250		SHIELD 256	%P1	29	SHIELD 256	%P2	22	
260		INDATA 128	P1	9	INDATA 128	P2	16	
270		SHIELD 128	%P1	30	SHIELD 128	%P2	24	
280		INDATA 64	P1	10	INDATA 64	P2	14	
290		SHIELD 64	%P1	30	SHIELD 64	%P2	24	
300		INDATA 32	P1	11	INDATA 32	P2	12	
310		SHIELD 32	%P1	31	SHIELD 32	%P2	26	
320		INDATA 16	P1	12	INDATA 16	P2	10	
330		SHIELD 16	%P1	31	SHIELD 16	%P2	26	
340		INDATA 08	P1	13	INDATA 08	P2	8	
350		SHIELD 08	%P1	32	SHIELD 08	%P2	28	
360		INDATA 04	P1	14	INDATA 04	P2	6	
370		SHIELD 04	%P1	32	SHIELD 04	%P2	28	
380		INDATA 02	P1	15	INDATA 02	P2	4	
390		SHIELD 02	%P1	33	SHIELD 02	%P2	30	
400		INDATA 01	P1	16	INDATA 01	P2	2	
410		SHIELD 01	%P1	33	SHIELD 01	%P2	30	
420	1	INSTRB	P1	17	BUSY H	P4	39	
430		INSTRB SHLD	%P1	34	BUSY H SHLD	P4	40	
440		ACKOUT	P1	18	NOT USED			
450		BIAS	%P1	19	BURST RQL	%P2	32	NOTE 01
460		BIAS	%P~~1~~2	~~17~~32	WCINCENB	%P~~1~~2	33	NOTE 01
470		MRESET	P1	20	FNCT2	P4	27	
480		MRESET SHLD	%P1	35	FNCT2 SHLD	P4	30	
490		RDY	P1	21	RDY	P2	35	
500		RDY SHLD	%P1	35	RDY SHLD	P2	36	
510		CYCREQ	P1	22	CYCLBREQ	P2	19	
520		CYCREQ SHLD	%P1	36	CYCLBREQ SHLD	%P2	34	
530		MISDAT	P1	23	STATUS A	P2	31	
540		MISDAT SHLD	%P1	36	STATUS A SHLD	%P2	34	
550		FNCT 1	P1	24	FNCT 1	P4	23	

	FROM			TO		
560	FNCT 1 SHLD	%P1	37	FNCT 1 SHLD	P4	32
570	C1	P1	25	C1 CNTL	P4	25
580	C1 SHLD	%P1	37	C1 CNTL SHLD	P4	34

		FROM			TO			
590	P	DIGITAL I/O			DIGITAL I/O			
600		37D PIN			40 PIN HEADER			
610	1	OUTDATA32K	P3	1	OUTDATA32K	P4	1	
620		SHIELD 32K	P3	20	SHIELD 32K	%P4	17	
630		OUTDATA16K	P3	2	OUTDATA16K	P4	3	
640		SHIELD 16K	P3	21	SHIELD 16K	%P4	17	
650		OUTDATA 8K	P3	3	OUTDATA 8K	P4	5	
660		SHIELD 8K	P3	22	SHIELD 8K	%P4	18	
670		OUTDATA 4K	P3	4	OUTDATA 4K	P4	7	
680		SHIELD 4K	P3	23	SHIELD 4K	%P4	18	
690		OUTDATA 2K	P3	5	OUTDATA 2K	P4	9	
700		SHIELD 2K	P3	24	SHIELD 2K	%P4	19	
710		OUTDATA 1K	P3	6	OUTDATA 1K	P4	11	
720		SHIELD 1K	P3	25	SHIELD 1K	%P4	19	
730		OUTDATA512	P3	7	OUTDATA512	P4	13	
740		SHIELD 512	P3	26	SHIELD 512	%P4	20	
750		OUTDATA256	P3	8	OUTDATA256	P4	15	
760		SHIELD 256	P3	27	SHIELD 256	%P4	20	
770		OUTDATA128	P3	9	OUTDATA128	P4	16	
780		SHIELD 128	P3	28	SHIELD 128	%P4	22	
790		OUTDATA 64	P3	10	OUTDATA 64	P4	14	
800		SHIELD 64	P3	29	SHIELD 64	%P4	22	
810		OUTDATA 32	P3	11	OUTDATA 32	P4	12	
820		SHIELD 32	P3	30	SHIELD 32	%P4	24	
830		OUTDATA 16	P3	12	OUTDATA 16	P4	10	
840		SHIELD 16	P3	31	SHIELD 16	%P4	24	
850		OUTDATA 08	P3	13	OUTDATA 08	P4	8	
860		SHIELD 08	P3	32	SHIELD 08	%P4	26	
870		OUTDATA 04	P3	14	OUTDATA 04	P4	6	
880		SHIELD 04	P3	33	SHIELD 04	%P4	26	
890		OUTDATA 02	P3	15	OUTDATA 02	P4	4	
900		SHIELD 02	P3	34	SHIELD 02	%P4	28	
910		OUTDATA 01	P3	16	OUTDATA 01	P4	2	
920		SHIELD 01	P3	35	SHIELD 01	%P4	28	
930		DIGGRD	%P2	3~~2~~0	STATUS C	P2	23	NOTE 01
940		DIGGRD	%P2	38	STATUS C	P2	25	NOTE 01
950		DIGGRD	%P2	40	STATUS B	P2	27	NOTE 01
960		DIGGRD	P4	36	CO CNTRL H	P4	29	NOTE 01
970		BIAS	%P4	1 ~~33~~ 19	BAINCENB	P4	33	NOTE 01
980		DIGGRD	P4	38	AOO	P4	35	NOTE 01
990		DIGGRD	P4	40	ATTN	P4	37	NOTE 01
1000		DIGGRD	%P2	40	CYCREQ A	P2	39	NOTE 01

TITLE: CABLE INTERFACE DR11-W
DWG NO. 82521-00 REV .....
SHEET..7..OF..7..

PRESTON SCIENTIFIC
PRINTED 07/08/83

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION	
10	2	226-55	HOUSING CONNECTOR 20 DUAL POS	
20	2	207-11	CONNECTOR 37 POS (PLUG) HD-20	
30	74	331-85	CONTACT PIN	
35	80	331-50	CONTACT PIN	
40	2	19-03	CLAMP CABLE	
50	A/R	993-20	CABLE RG174/U	
70	A/R	993-01	WIRE 18 AWG	WHITE
80	A/R	975-01	TUBING 1/2 ID	WHITE

SECTION 3

FACTORY TEST REPORT

FACTORY TEST REPORT

FACTORY TEST REPORT

PRESTON SCIENTIFIC
805 E CERRITOS
ANAHEIM CA 92805
(714) 776 6400
TELEX 65-532

MODEL GMAD-2A

TEST REPORT

Test Technician L. GUARD

Date 8-4-83

Serial Number RAC096

Register Number 18620

1.0 SYSTEM NUMBER 82520

2.0 ADC ASSEMBLY NUMBER 82520

3.0 RESOLUTION 14 BITS AND SIGN

4.0 OUTPUT CODE 2's Comp

5.0 I/O LOGIC TYPE DR 11W

6.0 FULL SCALE INPUT ±10V

7.0 +10 VOLT REFERENCE 9.9943 V

8.0 CONVERSION TIME 3.8μsec

9.0 THROUGHPUT RATE 500KHz

10.0 ACCURACY ±0.02% OF FS

11.0 CROSSOVER CHECK MONOTONIC

MODEL GMAD-2A ADC TEST REPORT (continued)

12.0

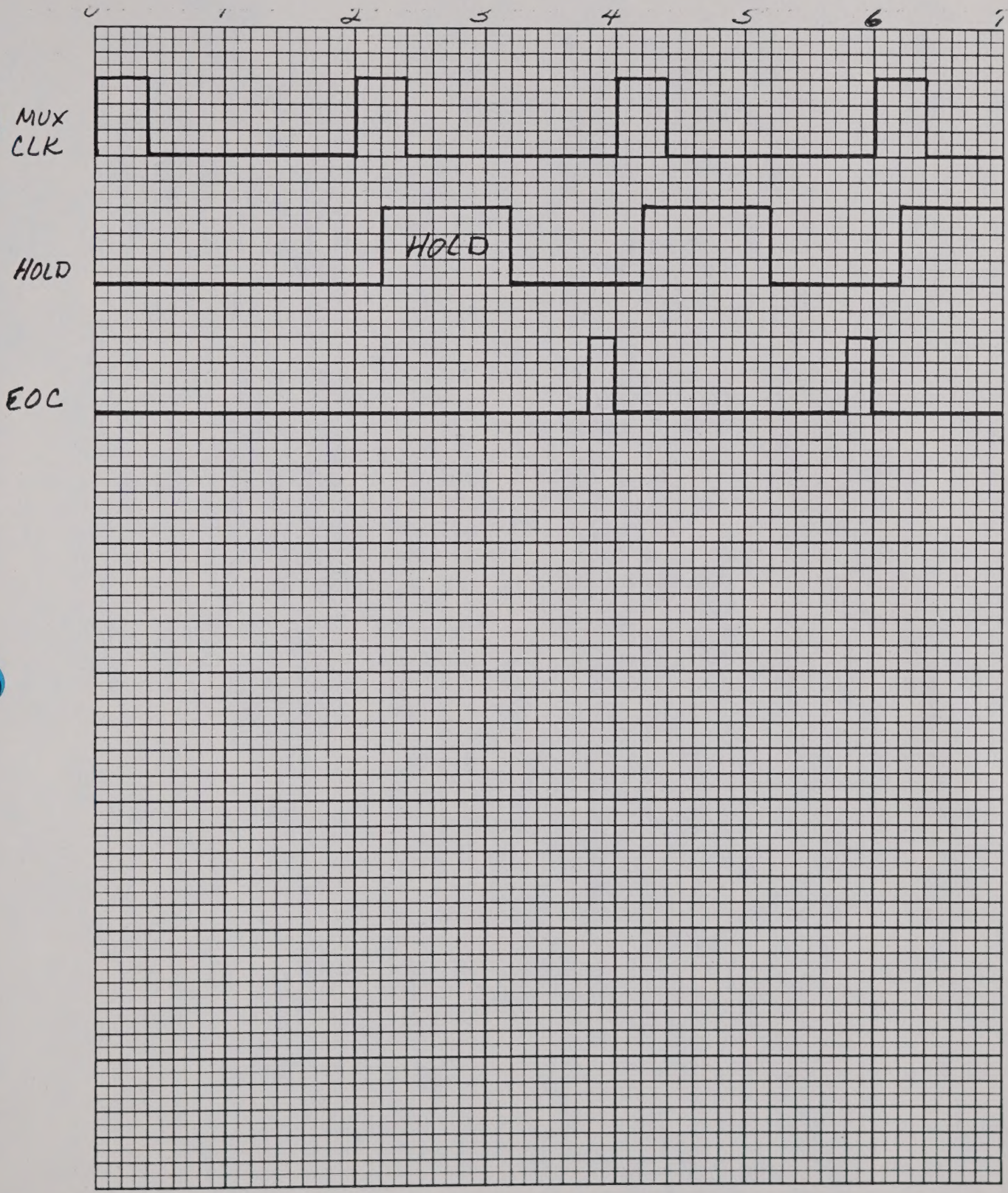
BINARY DISPLAY TWO'S COMPLEMENT 14 BITS AND SIGN 10.0000 volts/FULL SCALE	THEORETICAL INPUT ±2.1mV	ACTUAL INPUT	ERROR mv
0 1 1 1 1 1 1 1 1 1 1 1 1 1 0	9.9988	9.9988	0
0 1 1 1 1 0 0 0 0 0 0 0 0 0 0	9.3750	9.3750	0
0 1 1 1 0 0 0 0 0 0 0 0 0 0 0	8.7500	8.7501	+.1
0 1 1 0 0 0 0 0 0 0 0 0 0 0 0	7.5000	7.5002	+.2
0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	5.0000	5.0002	+.2
0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	1.2500	1.2504	+.4
0 0 0 0 1 0 0 0 0 0 0 0 0 0 0	0.6250	0.6254	+.4
0 0 0 0 0 0 0 0 0 0 0 0 0 1 0	0.0012	0.0013	+.1
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0000	+0.0000	0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-0.0006	-0.0006	0
1 1 1 1 1 0 0 0 0 0 0 0 0 0 0	-0.6250	0.6249	+.1
1 1 1 1 0 0 0 0 0 0 0 0 0 0 0	-1.2500	1.2500	0
1 1 1 0 0 0 0 0 0 0 0 0 0 0 0	-2.5000	2.5002	-.2
1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	-5.0000	5.0001	-.1
1 0 1 0 0 0 0 0 0 0 0 0 0 0 0	-7.5000	7.5000	0
1 0 0 1 0 0 0 0 0 0 0 0 0 0 0	-8.7500	8.7500	0
1 0 0 0 1 0 0 0 0 0 0 0 0 0 0	-9.3750	9.3750	0
1 0 0 0 0 0 0 0 0 0 0 0 0 0 1	-9.9994	9.9994	0

DATA TAKEN ON CHANNEL 3 AT A GAIN OF N/A

FIRST READING ERROR AND CROSSTALK LESS THAN ± 3 COUNTS

DATE 8-4-83

SERIAL NO. RAC096


0
1
2
3
4
5
6
7
MUX CLK
HOLD
HOLD
EOC

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